WHAT IS CLAIMED IS:

1. A refractive index detector comprising:

a duct, said duct having an interior surface and a substantially parallel gap formed by a first wall and a second wall of said duct, said first wall and said second wall are transparent, said duct receiving a solution wherein light, having a wavelength, incident to said detector at an angle greater than a critical angle, is communicated reflectively to an optical sensor as a function of said solution in said duct and a refractive index is calculated based on reflected light as measured by said optical sensor.

2. The detector of claim 1 wherein said gap is approximately equal to or greater than the wavelength of said light.

3. The detector of claim 1 wherein said first wall and said second wall are translucent.

4. The detector of claim 1 wherein said duct comprises glass.

5. The detector of claim 1 wherein said duct has a refractive index greater than a refractive index of said binding partner.

6. The detector of claim 1 wherein said gap has a cross sectional dimension of between 50 and 1000 nanometers.

7. The detector of claim 1 wherein said duct includes a binding partner for an analyte immobilized on at least a portion of said interior surface of said duct, said binding partner capable of binding to said analyte.

8. The detector of claim 7 wherein said analyte comprises a pathogen, a microorganism, a bacteria, or a virus.

9. The detector of claim 7 wherein said binding partner for said analyte is an antibody or antibody fragment that binds said analyte.

10. The detector of claim 7 wherein said analyte is a ligand specific for a cellular receptor and said binding partner is a cellular receptor.

11. The detector of claim 7 wherein said binding partner is a ligand for a cellular receptor and said analyte is a cellular receptor.

12. The detector of claim 7 wherein said analyte is a metallic ion and said binding partner is a chelator that binds said metallic ion.

13. A refractive index sensor system comprising:

a first translucent plate;

a plurality of sidewalls, each of said plurality of sidewalls sealably coupled to said first translucent plate;

a second translucent plate parallel with the first translucent plate and spaced apart from said first translucent plate by a transverse distance, said second translucent plate sealably coupled to each of said plurality of sidewalls, and forming a cavity therebetween, said cavity having an interior and having a depth defined by said transverse distance between said first translucent plate and said second translucent plate;

a light source illuminating said first translucent plate at a predetermined angle relative to said first translucent plate; and

a light receiver responsive to light reflected from said cavity.

14. The system of claim 13 wherein said light receiver is sensitive to the wavelength of light emanating from matter in the cavity.

15. The system of claim 13 wherein said light receiver is sensitive to the angle of incidence of light emanating from said fluid solution in the cavity.

16. The system of claim 13 wherein said light receiver is sensitive to light transmitted through matter in the cavity.

17. The system of claim 13 wherein said light receiver is sensitive to light reflected by said fluid solution in said cavity.

18. The system of claim 13 further comprising a first prism in communication with said first translucent plate.

19. The system of claim 13 further comprising a second prism in communication with the second translucent plate.

20. The system of claim 13 further comprising a binding partner affixed to said interior of said cavity, wherein said binding partner binds to a predetermined analyte in a fluid solution introduced into said cavity.

21. The system of claim 20 wherein said binding partner is coupled to said first translucent plate.

22. The system of claim 20 wherein a layer of said binding partner is coupled to said first translucent plate.

23. The system of claim 13 wherein said light source comprises a laser.

24. The system of claim 13 wherein said light source comprises a polarized laser light source.

25. The system of claim 13 wherein said light receiver comprises a power meter.

26. A method of manufacturing a sensor, the method comprising:

providing a first transparent wafer;

depositing a layer of amorphous silicon on said first transparent wafer, said layer having a thickness;

forming a trench in said layer of amorphous silicon;

bonding a second transparent wafer to said amorphous silicon to form a tunnel, said tunnel having an interior space and a depth substantially equal to said thickness; and

forming a hole in said second transparent wafer, said hole providing capillary fluid flow to said interior space.

27. The method of claim 26 wherein depositing a layer of amorphous silicon includes depositing a layer of amorphous silicon by chemical vapor deposition.

28. The method of claim 26 wherein depositing a layer of amorphous silicon includes depositing a layer of amorphous silicon by plasma enhanced chemical vapor deposition.

29. The method of claim 26 wherein forming a trench comprises coating the layer of amorphous silicon with an etch resist.

30. The method of claim 26 wherein forming a trench comprises etching using a reactive ion etcher.

31. The method of claim 26 wherein depositing comprises depositing to a depth corresponding to a desired trench depth.

32. The method of claim 26 wherein depositing comprises depositing to a depth of approximately 600 nanometers.

33. The method of claim 26 wherein bonding a second transparent wafer comprises anodically bonding a second transparent wafer.

34. The method of claim 26 further comprising bonding a reservoir to said second transparent wafer such that said reservoir is in communication with said hole.

35. A method of using a sensor to detect an analyte comprising:

providing a translucent chamber having an interior and an exterior, wherein said interior includes an immobilized binding partner for said analyte, said translucent chamber having a first refractive index;

introducing a fluid into said camber, said fluid having a second refractive index, wherein said first refractive index differs quantitatively from said second refractive index;

projecting a light beam at said chamber;

sensing light emanating from said chamber; and

determining a refractive index for said chamber with fluid.

36. The method of claim 35 wherein projecting a light beam at said chamber comprises projecting a light beam at said chamber at a plurality of incidence angles.

37. The method of claim 35 wherein introducing a fluid into said chamber comprises introducing a fluid suspected of including said analyte into said chamber.

38. The method of claim 35 wherein introducing a fluid into said chamber comprises circulating said fluid into said chamber.

39. The method of claim 35 wherein sensing light emanating from said chamber comprises sensing light using a powermeter.

40. The method of claim 35 wherein sensing light emanating from said chamber comprises sensing transmitted light emanating from said chamber.

41. The method of claim 35 wherein sensing light emanating from said chamber comprises sensing reflected light emanating from said chamber.

42. A detector system comprising:

chamber means for containing a sample fluid, said chamber means including a binding means immobilized on an interior surface of said chamber means, wherein said binding means binds to a predetermined analyte, said chamber means having a first refractive index based on said chamber means and said binding means and wherein said chamber means has a second refractive index at a time when said binding means have bound to a solution including said predetermined analyte;

light means for projecting an incident light beam at said chamber means at a predetermined angle;

sensor means for receiving reflected light emanating from said chamber means, said reflected light is based on said first refractive index and said second refractive index; and

processing means for determining a refractive index of said sample fluid.

43. The system of claim 42 wherein said binding means is an antibody against a particular analyte.

44. The system of claim 42 wherein said binding means is a chelator that binds to a metallic ion.

45. The system of claim 42 wherein said chamber means comprises a first glass plate and a second glass plate.

46. The system of claim 42 wherein said chamber means comprises a first glass plate and a second glass plate, and further wherein said first glass plate and said second glass plate are separated by approximately 50 to 1000 nanometers.

47. The system of claim 42 wherein said light beam means comprises a laser light source.

48. The system of claim 42 wherein said light beam means comprises a polarized laser light source.

49. The system of claim 42 wherein said sensor means comprises a powermeter.

50. The system of claim 42 wherein said processing means comprises a computer.